

REMARKS

The Office Action mailed May 27, 2009, has been received and carefully considered. Claims 1 and 16 have been amended. The claim amendments are believed to be fully supported by the Application as originally filed. Thus, to the best of the undersigned attorney's information and belief, these changes contain no new matter for the reasons given in the remarks which follow.

Claims 1-3, 9-13, 16, 17, and 19-23 are now pending in the Application and are submitted to be in allowable condition. Claims 1 and 16 are independent.

Claim Changes and Support

Independent claims 1 and 16 have been amended to recite, "*A fuel supplying apparatus ~~[[for]] in a fuel tank of~~ a fuel cell, comprising: a fuel; and a cross-linked membrane for encapsulating the fuel and isolating the fuel from a fuel solvent in the fuel ~~tank~~ cell, ...*". These features are discussed on page 3, lines 1 and 11-13, of the Applicant's Specification.

Independent claims 1 and 16 have been amended further to add the recitation, "*wherein the cross-linked membrane serves as a one-way gate to the fuel encapsulated therein, such that the fuel is released at a rate controlled by diffusion*". These features are discussed on page 5, second paragraph beginning with line 6, of Applicant's Specification.

I. The continued rejection of claims 1-3, 9-13, 16, 17, and 19-23 under 35 USC §112, first paragraph, is believed resolved by the amendments made herein to independent claims 1 and 16.

Applicant continues to traverse the Examiner's position that claims 1-3, 9-13, 16, 17 and 19-23 fail to comply with the written description for the reasons given on page 2 of the Office Action.

For clarification and to advance prosecution, however, independent claims 1 and 16 have been amended to recite, *A fuel supplying apparatus [[for]] in a fuel tank of a fuel cell, comprising: a fuel; and a cross-linked membrane for encapsulating the fuel and isolating the fuel from a fuel solvent in the fuel tank cell, ...*. These features are discussed on page 3, lines 1 and 11-13, of the Applicant's Specification, as discussed above, and are believed to address and resolve the Examiner's concerns.

Applicant therefore believes that claims 1-3, 9-13, 16, 17 and 19-23 comply clearly with the requirements of 35 U.S.C. §112, first paragraph, so that this ground of rejection should be withdrawn.

II. The continued rejection of claims 1 and 2 under 35 U.S.C. §102(e) as anticipated by Prasad et al. (US 6,924,054) is respectfully traversed for the reasons given in the following.

1. Independent claims 1 and 16 of the present Application are directed to a fuel supplying apparatus in a fuel tank of a fuel cell including, *"a cross-linked membrane for encapsulating the fuel and isolating the fuel from a fuel solvent in the fuel tank, wherein the cross-linked membrane is only permeable to the fuel, ...wherein the cross-linked membrane serves as a one-way gate to the fuel encapsulated therein, such that the fuel is released at a rate controlled by diffusion"*.

2. Applicant respectfully submits that the disclosure of Prasad does not teach or suggest the above technical features recited in Applicant's independent claim 1 as amended because the material holding methanol (fuel) in Prasad is impermeable to the fuel (see Prasad Col. 4, line 45).

3. Anticipation requires that every feature of a claim is disclosed by a single reference.

4. Since the disclosure of Prasad does not teach every feature of independent claim 1, and the claims depending there from for the same reason, specifically claim 2, the disclosure of Prasad does not anticipate claims 1 and 2, and this ground of rejection should be removed.

III. The continued rejection of claims 3, 9, 16, 17, and 19 under 35 U.S.C. §103(a) as obvious in view of Prasad et al. (US 6,924,054, hereinafter "Prasad") in view of Choi et al. (US 5,314,952, hereinafter "Choi") is respectfully traversed for the reasons given in the following.

1. Independent claims 1 and 16 of the present Application are directed to a fuel supplying apparatus in a fuel tank of a fuel cell including, *"a cross-linked membrane for encapsulating the fuel and isolating the fuel from a fuel solvent in the fuel tank, wherein the cross-linked membrane is only permeable to the fuel, ...wherein the cross-linked membrane serves as a one-way gate to the fuel encapsulated therein, such that the fuel is released at a rate controlled by diffusion"*.

2. Applicant respectfully submits that the disclosure of Prasad does not teach or suggest the above technical features recited in Applicant's independent claims 1 and 16 as amended.

3. On page 4, lines 1-3, of the Office Action, the Examiner alleges that, *"... Prasad teach a cross-linked polymer that holds the methanol fuel in area 26"*.

4. Applicant respectfully disagrees because the material holding methanol (fuel) in Prasad is impermeable to the fuel (see Prasad Col. 4, line 45).

5. In particular, Fig. 2 and Col. 4, lines 28-31, of Prasad teach, *"... barrier 40 includes a first flexible inner container 42 surrounding fuel storage area 24, and a second flexible inner container 44 surrounding waste storage area 26"*, and Col. 4, lines 43-46, teach, *"First flexible inner container 42 and second flexible inner container 44 may be made of any suitable material. Suitable materials include those that are non-brittle, impermeable and chemically stable to the fuel and waste solutions [emphasis added]"*.

6. It is thus submitted to be clear that, in Prasad, neither the first flexible inner container 42 surrounding fuel storage area 24 nor the second flexible inner container 44 surrounding waste storage area 26 is permeable to the fuel.

7. Moreover, Col. 3, lines 4-7, of Prasad disclose, *"Fuel solution is passed from fuel storage area 24 to the fuel cell through a fuel solution outlet 28, and waste is passed into waste storage area 26 through a waste inlet 30"*. Therefore, the fuel of Prasad is released from the fuel solution outlet 28, rather than released from the first flexible inner container 42 surrounding fuel storage area 24. Also, Col. 4, lines 24-26, of Prasad teach, *"Suitable barrier designs (40) include those that prevent the mixing of fuel solution and waste products"*. Therefore, it is submitted to be clear that the first flexible inner container 42 (and the second flexible inner container 44) of Prasad should be impermeable to the fuel so as to prevent the fuel from leaking out.

8. Accordingly, Applicant respectfully submits that Prasad fails to teach or suggest Applicant's technical features of *"a cross-linked membrane for encapsulating the fuel and isolating the fuel from a fuel solvent in the fuel tank, wherein the cross-linked membrane is only permeable to the fuel, ... wherein the cross-linked membrane serves as a one-way gate to the fuel encapsulated therein, such that the fuel is released at a rate controlled by diffusion"*, as now recited in Applicant's independent claims 1 and 16, and the claims depending there from, respectively.

9. On page 4, lines 3-5, of the Office Action, the Examiner alleges that, *"It is noted that the cross-linked polymer in Prasad allows the methanol to permeate in one direction-into the super-absorbent material ..."*.

10. Applicant respectfully disagrees.

11. As mentioned above, Prasad teaches in Col. 4, lines 43-46, that, *"First flexible inner container 42 and second flexible inner container 44 may be made of any suitable material. Suitable materials include those that are non-brittle, impermeable and chemically stable to the fuel and waste solutions"*. Therefore, Prasad does not teach or suggest that the first flexible inner container 42 and/or the second flexible inner container 44 are permeable to methanol. Indeed, Applicant considers that one of ordinary skill in this art would interpret "impermeable" according to its plain meaning. Applicant considers that an artisan would interpret the disclosure of "impermeable" as teaching against "permeability".

12. Moreover, Col. 6, lines 13-16, of Prasad disclose that, *"Waste storage area 26 may include a super-absorbent material to prevent waste from leaking out of waste inlet 30 or from spilling if second flexible inner container 44 ruptures".* Further, Col. 6, lines 24-27, of Prasad disclose that, *"a super-absorbent material may be placed at any other desired location within outer container 22 to absorb either fuel solution or waste solution in the event of a rupture".* In other words, Prasad merely teaches that a super-absorbent material can be arranged to absorb either fuel solution or waste solution leaking out from the ruptured first flexible inner container 42 or the ruptured second flexible inner container 44.

13. Therefore, Prasad is believed silent regarding whether the first flexible inner container 42 and/or the second flexible inner container 44 allow methanol fuel to permeate into the super-absorbent material except in the event of an unwanted rupture. In this regard, Applicant respectfully submits that Prasad fails to teach or suggest the technical features of *"a cross-linked membrane for encapsulating the fuel and isolating the fuel from a fuel solvent in the fuel tank, wherein the cross-linked membrane is only permeable to the fuel"* and *"wherein the cross-linked membrane serves as a one-way gate to the fuel encapsulated therein, such that the fuel is released at a rate controlled by diffusion"*, as recited in Applicant's independent claims 1 and 16 as amended.

14. In rejecting claims 3, 9, 16, 17, and 19 as obvious over the combined disclosures of Prasad and Choi, the Examiner acknowledges that Prasad does not teach Applicant's particular claimed polymer that is cross-linked and for the membrane and the fuel to have a gel-like structure. The Examiner therefore relies on the disclosure of Choi for these teachings.

15. However, Applicant considers that the disclosure of Choi does not provide the teachings missing from Prasad discussed in points (1) – (13) above so that Applicant respectfully submits that the combined disclosures of Prasad and Choi do not meet the features of Applicants' invention as claimed in independent claims 1 and 16 as amended. Therefore, Applicant respectfully submits that the combined disclosures of Prasad and Choi do not set out a *prima facie* case of obviousness against independent claims 1, 16, or dependent claims 3, 9, 16, 17, and 19 for the same reasons, so that this ground of rejection should be withdrawn.

16. That is, Applicant respectfully submits that claims 1-3, 9-13, 16, 17, and 19-23 are patentable over Prasad and/or Choi so that the foregoing rejections under 35 U.S.C. §102(e) and 103(a) should be withdrawn.

CONCLUSION

In view of the foregoing amendments and remarks, Applicant submits every rejection has been addressed and overcome so that claims 1-3, 9-13, 16, 17, and 19-23 and the Application are in condition for allowance. Reconsideration and passage of this case to issue are therefore requested.

Should the Examiner consider that a conference would help to expedite the prosecution of this Application, the Examiner is invited to contact the undersigned to arrange for such an interview.

No fee is believed due. Should any fee be deemed due, the Commissioner is hereby authorized to charge the fee to our Deposit Account No. 18-0002 and is requested to advise us accordingly.

Respectfully submitted,



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Date

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RHB/AJW/vm

Amendment

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